Amendments to the Specification

[0059] At step 134, battery power Pbatt is next determined at the selected evaluation input torque, Ti_n. The following coupling constraint equation is known for the EVT for calculating the motor A and motor B torques:

$$\begin{bmatrix} Ta \\ Tb \end{bmatrix} = \begin{bmatrix} K_{11} & K_{12} & K_{13} & K_{14} \\ K_{21} & K_{22} & K_{23} & K_{24} \end{bmatrix} \begin{bmatrix} Ti \\ To \\ Ni\_dot \\ No\_dot \end{bmatrix}$$

where Ta is motor A ~~speed~~ torque;

Tb is motor B ~~speed~~ torque;

Ti is EVT input ~~speed~~ torque;

To is EVT output ~~speed~~ torque;

Ni_dot is EVT input acceleration;

No_dot is EVT output acceleration; and

Kn is a 2x4 matrix of parametric values determined by the hardware gear and shaft interconnections and estimated hardware inertias applicable to the current drive range and represents what is commonly referred to as the plant model.

Additionally, motor speeds are derived from the following known coupling constraint equation:

$$\begin{bmatrix} Na \\ Nb \end{bmatrix} = \begin{bmatrix} K_{11} & K_{12} \\ K_{21} & K_{22} \end{bmatrix} \begin{bmatrix} Ni \\ No \end{bmatrix}$$

where Na is motor A speed;

Nb is motor B speed;

Ni is EVT input speed;

No is EVT output speed; and

Kn is a 2x2 matrix of parametric values determined by the hardware gear and shaft interconnections.

Battery power at the evaluation input torque is determined in accordance with the following relationship:

Pbatt = Pmotor_A + Ploss_A + Pmotor_B + Ploss_B + Ploss_acc

where Pmotor_A and Pmotor_B are unit A and unit B motor power, respectively;

Ploss_A and Ploss_B are unit A and unit B aggregate motor and power electronics losses (motor losses), respectively; and

Ploss_acc is modeled as a DC load, e.g V*I, representing battery draw to power accessories or any other load upon the batteries not directly related to the motor units A and B.

Motor powers are determined in accordance with the following relationships:

Pmotor_A = Ta*Na, and
Pmotor_B = Tb*Nb

where motor speeds, Na and Nb, and motor torques, Ta and Tb, are derived from the two coupling constraint equations shown above.